A12
Power Amplifier

INSTALLATION MANUAL

ELAN®
HOME SYSTEMS

Preface

Purpose of This Manual

This manual provides step-by-step installation instructions and connection examples, along with basic user information for installation and ongoing use of the A12 Twelve Channel Amplifier. This manual is written for the installer of this equipment.

Organization

The following information is contained in this manual:

Safety Information	Provides a comprehensive list of safety practices and procedures allowing for the safe installation and operation of ELAN Home Systems' A12 Twelve Channel Amplifier.
A12 Introduction	Provides an introduction to the A12 Twelve Channel Amplifier, along with system features to include Front and Rear panel controls, indicators and connections, along with a short description of each.
A12 System Design Overview	Provides a system design application overview of the A12 Twelve Channel Amplifier for use in audio applications.
A12 Connections	Provides a description of A12 Twelve Channel Amplifier connections including connections made with ELAN Multi-Room Systems and direct connections the the A12 Twelve Channel Amplifier from other components.
Troubleshooting	Provides troubleshooting tables to help fix common discrepancies that may be associated with the A12 Twelve Channel Amplifier.
Specifications	Appendix A provides equipment specifications for the A12 Twelve Channel Amplifier.
Rack Mounting	Appendix B provides specifications for Rack Mounting of the A12 Twelve Channel Amplifier using the optional RMK3 Rack Mount Kit.

WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN!

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION

IMPORTANT SAFETY INFORMATION

Read Information—All the safety and operating information should be read before the appliance is operated.

Follow Information—All operating and use information should be followed.

Retain Information—The safety and operating information should be retained for future reference.

Heed Warnings—All warnings on the appliance and in the operating instructions should be heeded.

Wall Mounting—Mounting of this appliance should be done only by an authorized installer.

Ventilation—The appliances should be situated so that their location or position does not interfere with their proper ventilation. These appliances should never be placed near or over a radiator or heat register. These appliances should not be placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

Non-Use Periods—Appliances that are left unattended and unused for long periods of time should be de-energized.

Power Sources—The appliances should be connected to a power supply only of the type described in the operating instructions or as marked on each appliance. If you are not sure of the type of power supply to your home, consult your authorized ELAN dealer or local power company.

Grounding or Polarization—Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one blade wider than the other blade. A grounding type plug has two blades and a third grounding prong. The polarized wide blade and the third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Water and Moisture—To reduce the risk of electric shock or fire, these appliances should not be used near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

Power Cord Protection—Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.

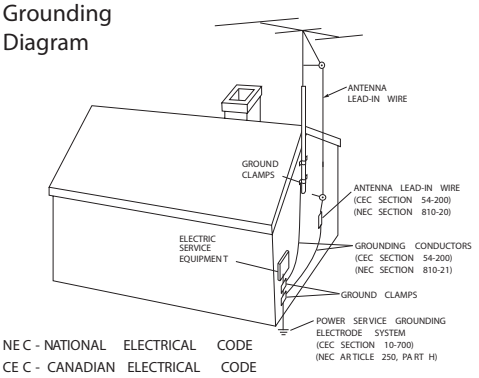
Telephones—Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning. Do not use a telephone to report a gas leak if the leak is in the vicinity of the ELAN electronic equipment because of risk of fire or explosion.

Cleaning—Unplug the apparatus from the power outlet before cleaning. Use only a dry cloth to clean the apparatus.

Power Lines—An outdoor antenna should be located away from power lines. When installing an outside antenna system, extreme care should be taken to avoid touching power lines or circuits, as contact with them may be fatal.

Outdoor Antenna Grounding—If an outside antenna or cable system is connected to these audio products, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the U.S. National Electrical Code, and Section 54 of the Canadian Electrical Code, provide information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See the grounding diagram (right).

Grounding Diagram



Overloading—Do not overload wall outlets and extension cords, as this could result in fire or electric shock.

Object and Liquid Entry—Never insert objects of any kind through the openings of these appliances, as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Care should be taken so that objects do not fall and liquids are not spilled into the appliance through openings in the enclosure.

Servicing—Do not attempt to service these appliances yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring Service—These appliances should be serviced by qualified service personnel when:

- A power supply connection or a plug has been damaged or
- If liquid has been spilled into the appliance or objects have fallen into the appliance or
- The appliance has been exposed to water or moisture or
- The appliance does not appear to operate normally or exhibits a marked change in performance or
- The appliance has been dropped or the enclosure damaged.

Replacement Parts—When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards. The Master Control Unit battery should be replaced only after turning the power off and only by an authorized installer.

Safety Check—Upon completion of any service or repairs to this audio product, ask the service technician to perform safety checks to determine that the audio product is in proper operating condition.

Lightning Storms—Unplug this apparatus during lightning storms or when unused for long periods of time.

Attachments and Accessories—Use only attachments/accessories specified by the manufacturer.

Cart, Stand, Tripod, Bracket or Table—Use only with a cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over.

Disconnect Device—Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain operable.

WARNING
RISK OF ELECTRIC SHOCK
DO NOT OPEN

Table of Contents

A12
Power Amplifier

Items in package:

- A12 Power Amplifier
- Power Cord
- Installation Manual

Chapter 1: Introduction

The ELAN A12 Power Amplifier is designed to provide a reliable, affordable solution for multi-room audio systems requiring up to twelve channels of amplification. Using proven analog technology, the A12 adds advanced features like Audio Sensing, Stereo/Mono Bus, and Trigger Inputs/Outputs to make it the premier amplifier in its price range.

A12 Features

12 x 40 Watts per Channel @ 8 Ohms

Stereo/Mono Bus

- Any input can be combined or bussed using simple DIP switches to send audio to any output without the use of additional patch cables - making setup neatand easy. BUS LOOP OUTPUTs allow the bussed signal to be sent to other amplfiers, A/V receivers, etc.

Individual Pair Remote Trigger Inputs

- Six +12VDC TRIGGER INPUTS allow each pair of channels to be activated independently.

System Trigger In/Out

- SYSTEM TRIGGER IN allows all channels of the amplifier to turn on when a signal is received.
- SYSTEM TRIGGER OUT sends a +12VDC pulse whenever any of the channels of the amplifier are on.

Audio Loop Outputs

- Sends audio signals out from specific A12 channels to line level inputs of other devices such as additional amplifiers or audio processors.

Individual Channel Level Adjustments

- Fine-tune each channel's level using precision potentiometers.
- Audio Sense
  Allows amplifier channels to mute/un-mute based upon whether an audio signal is detected.

Removable Locking Speaker Terminals

- Six removable locking connectors allow easy speaker wire terminations.

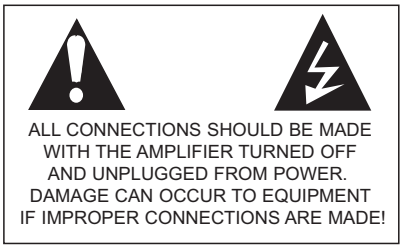
Available in 240 Volt Version
cTUVus Certified, CE®, and C-tick

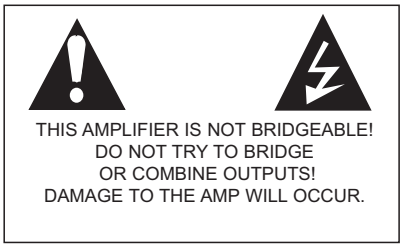
Safety Concerns

Use only grounded outlets when powering this product. Making any modification to the power cord could cause unsafe operation and will void the manufacturer's warranty.

AC Power Considerations

The A12 requires 4 Amps of AC current. The A12240 (240V version) requires 2 Amps of AC current. When designing any whole house system using multichannel amplifiers, make sure to provide adequate provisions for all electronic equipment to be installed. This may require additional outlets and/or circuit breakers tobe installed. Consult a licensed electrician in this case.





A12 Functions and Indicators

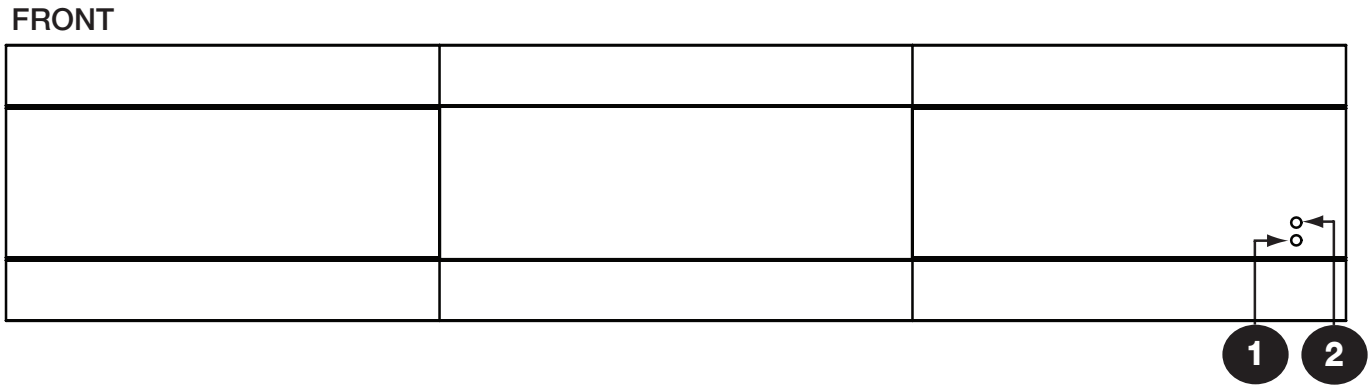


Figure 1-1: A12 Front Panel

Table 1-1:Front Panel

Item	Function
1	POWER LED - Glows Blue When Power Switch is ON and Unit Plugged In
2	STATUS LED - Glows Green When Any Channel is ON

A12 Rear

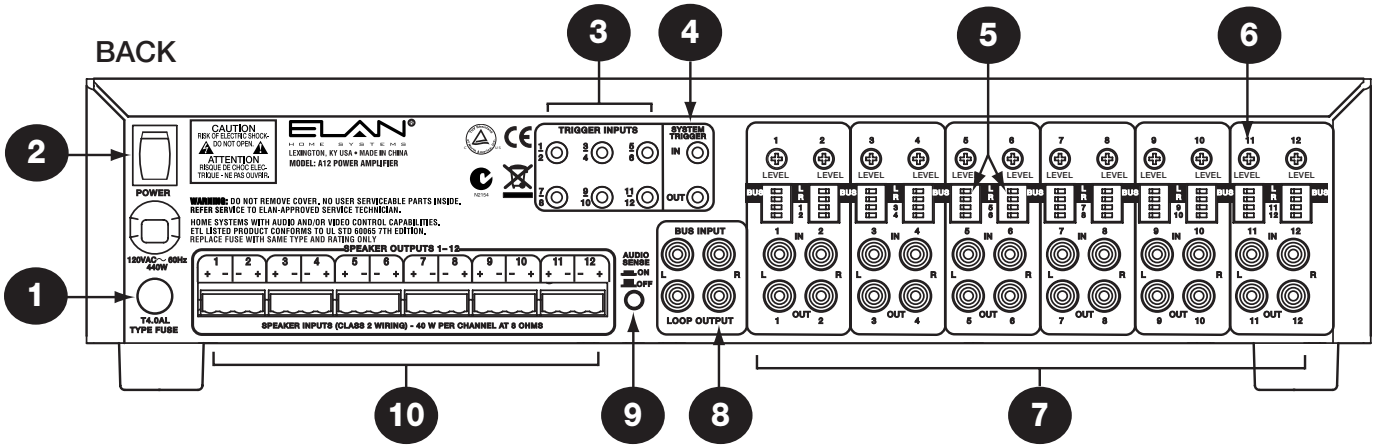


Figure 1-2: A12 Rear Panel

Table 1-2: Rear Panel

Item	Function
1	FUSE: A12 - Replace with T4.0AL Type Fuse A12240 - Replace with T2.5AL Type Fuse
2	POWER SWITCH
3	TRIGGER INPUTS (6)
4	SYSTEM TRIGGER IN/OUT
5	BUS MODE DIP SWITCHES (12)
6	LEVEL ADJUSTMENT POTS (12)
7	LINE INPUTS/LOOP OUTPUTS
8	BUS INPUTS/LOOP OUTPUTS
9	AUDIO SENSE BUTTON
10	SPEAKER OUTPUTS

Chapter 2. System Design & Applications

System Design

The first step to a good design is to map the system. It is advisable to mark up a copy of the house floor plan with speaker, keypad, touch panel, volume control, and equipment locations etc. Make sure that all locations are decided upon before pre-wiring commences so that all necessary wiring and installation hardware is in place. This unit will be interfacing with other components such as multi-room controllers, source components, communications controllers, serial controllers, and user interfaces, so it is essential that ALL system components are accounted for prior to the pre-wire stage.

Secondly, make a detailed list of all components. Include source equipment, keypads, touch panels, volume controls, amplifiers, and communications gear. Be sure to include necessary electrical boxes, structured wiring enclosures, telephone lines, rough-in brackets, patch cords, power supplies, etc.

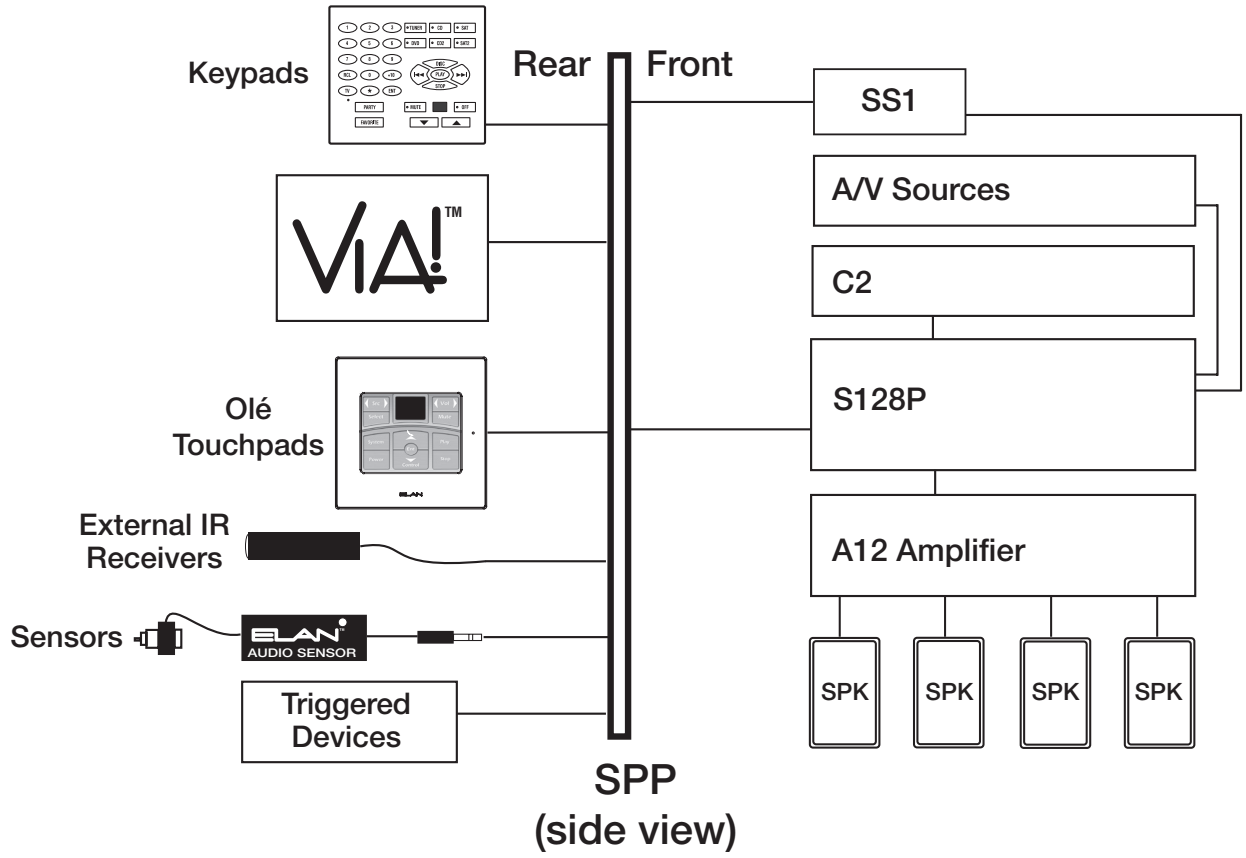


Figure 2-1: System Design

Pre-Wire

WIRING CONSIDERATIONS

- **Speaker Wires** 28-16 AWG Speaker Wire
- **Audio Cables** RCA Patch Cables
- **Triggers** 2 Conductor Wire w/ 3.5mm mono connector

Multi-Room Applications

The A12 is specifically designed for multi-room applications. Virtually every feature was selected to enhance the multi-room experience and simplify the multi-room installation. With Buffered Loop Outputs, Bus Modes, and advanced Trigger options, the A12 can be customized for even the most complex systems.

Independent Stereo Zones

The A12 is designed to easily power six independent stereo zones without any special setup procedures. This is the standard configuration for most multi-zone audio distribution systems. In the drawing below, each pair of speakers will have independent line-level volume control.

Three Independent Stereo Zones

- Zone 1 Output to Line Inputs 1 & 2
- Zone 2 Output to Line Inputs 3 & 4
- Zone 3 Output to Line Inputs 5 & 6
- Bus Mode DIP Switches in Default DIRECT Position

Each Zone's Speakers Volume Ramps Up & Down Independently

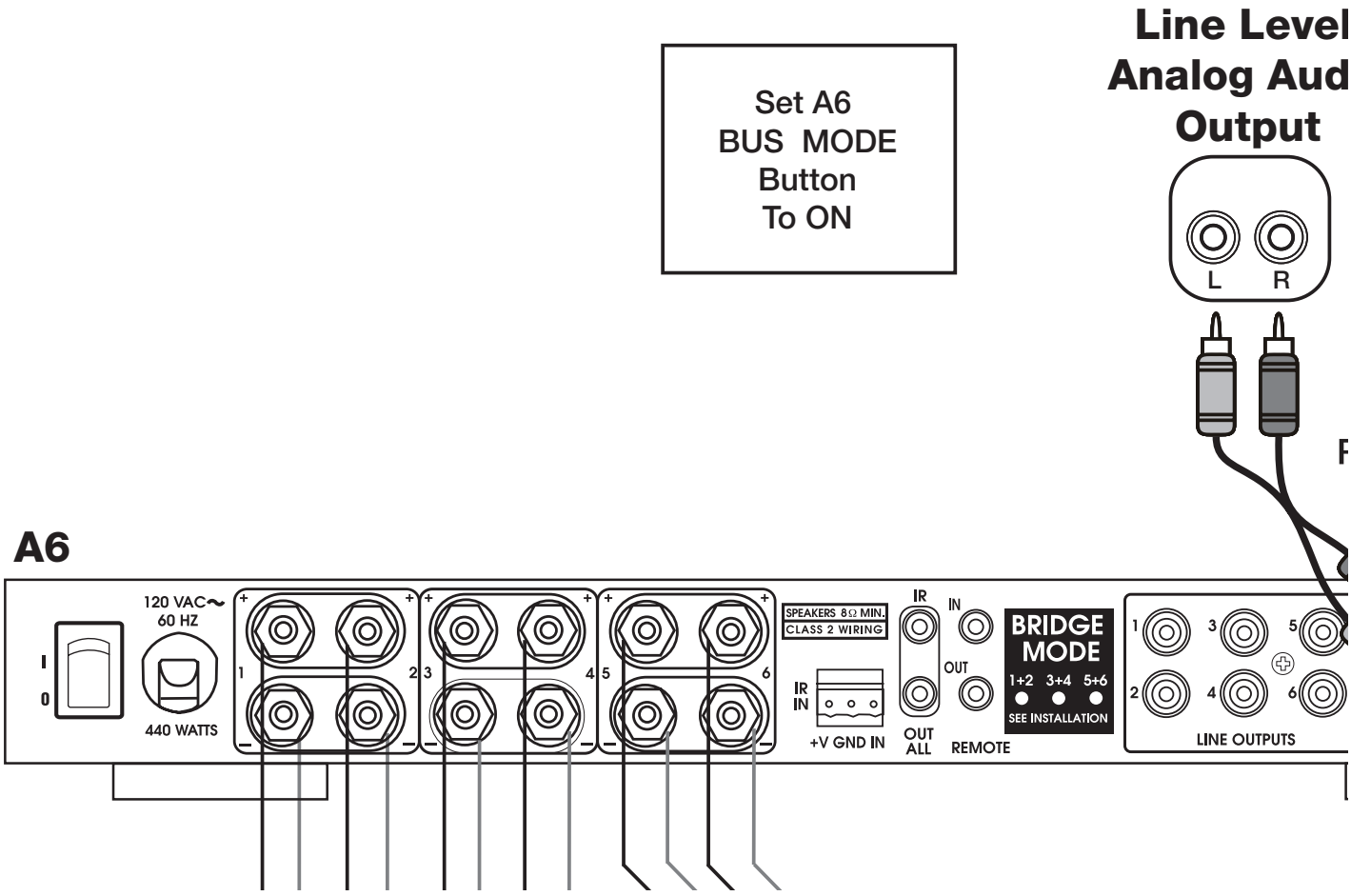


Figure 2-2: Independent Stereo Zones

Two Room Stereo Zone

By using the A12's Buffered Loop Outputs, an additional pair of speakers can be added to a zone. In this example, both pairs of speakers will ramp volume up and down simultaneously.

Two Room Stereo Zone

- Zone 1 Output to Line Inputs 1 & 2
- Line Outputs 1 & 2 to Line Inputs 3 & 4
- Bus Mode DIP Switches in Default DIRECT Position

All Speakers Volume Ramps Up & Down Together

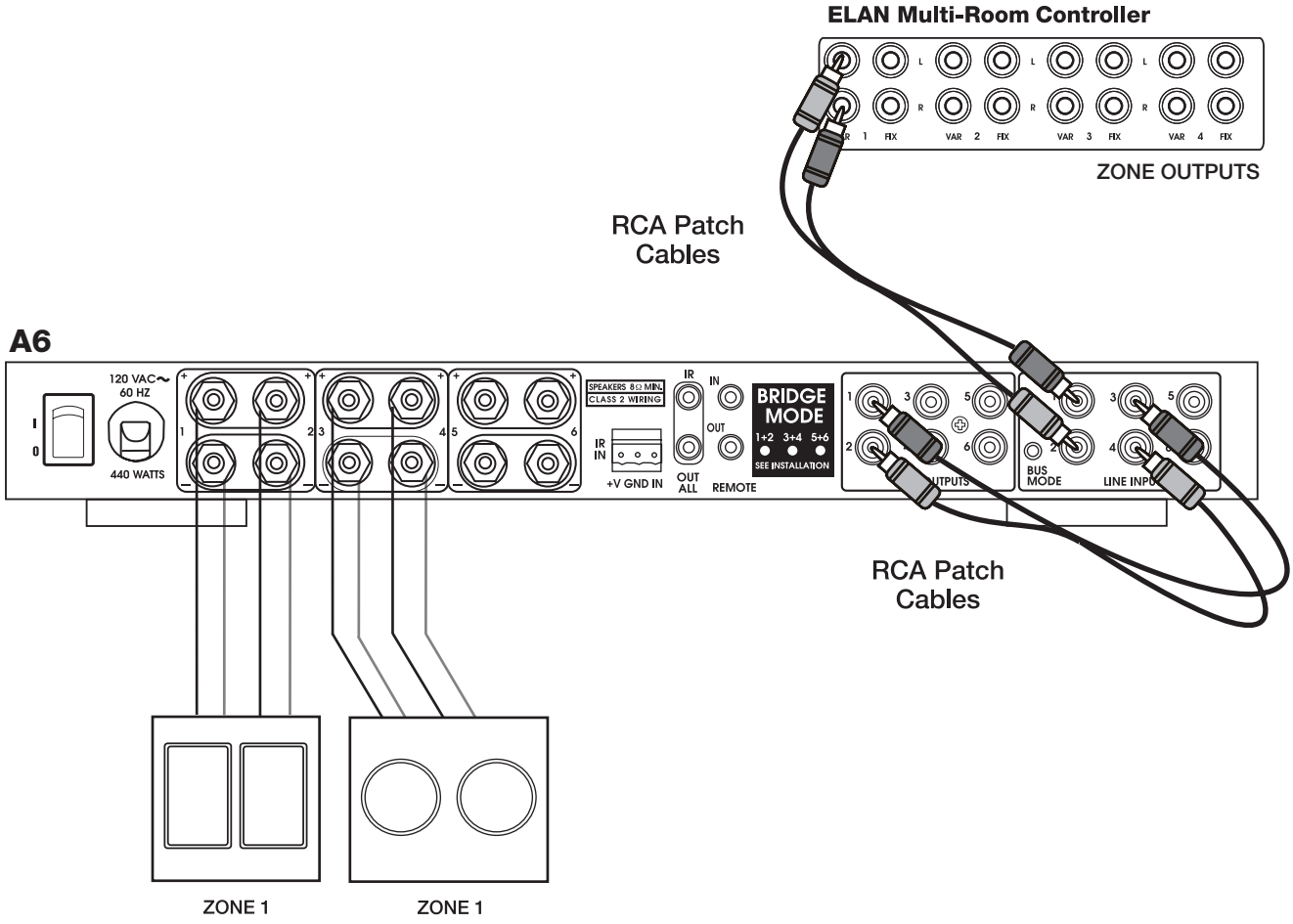


Figure 2-3: Two Room Stereo Zone

Stereo Zone w/ Mono Sub-Zone

Use the Loop Out Jacks and an RCA 'Y' cable to create mono sub-zones within a stereo zone. This application is perfect for large rooms with smaller rooms attached such as a Master Bedroom/Master Bath or Kitchen/Laundry Room.

Stereo Zone w/ Mono Sub-Zone

- Zone 1 Output to Line Inputs 1 & 2
- Line Outputs 1 & 2 to RCA 'Y' Cable
- RCA 'Y' Cable to Line Input 3
- Bus Mode DIP Switches in Default DIRECT Position

All Speakers Volume Ramps Up & Down Together

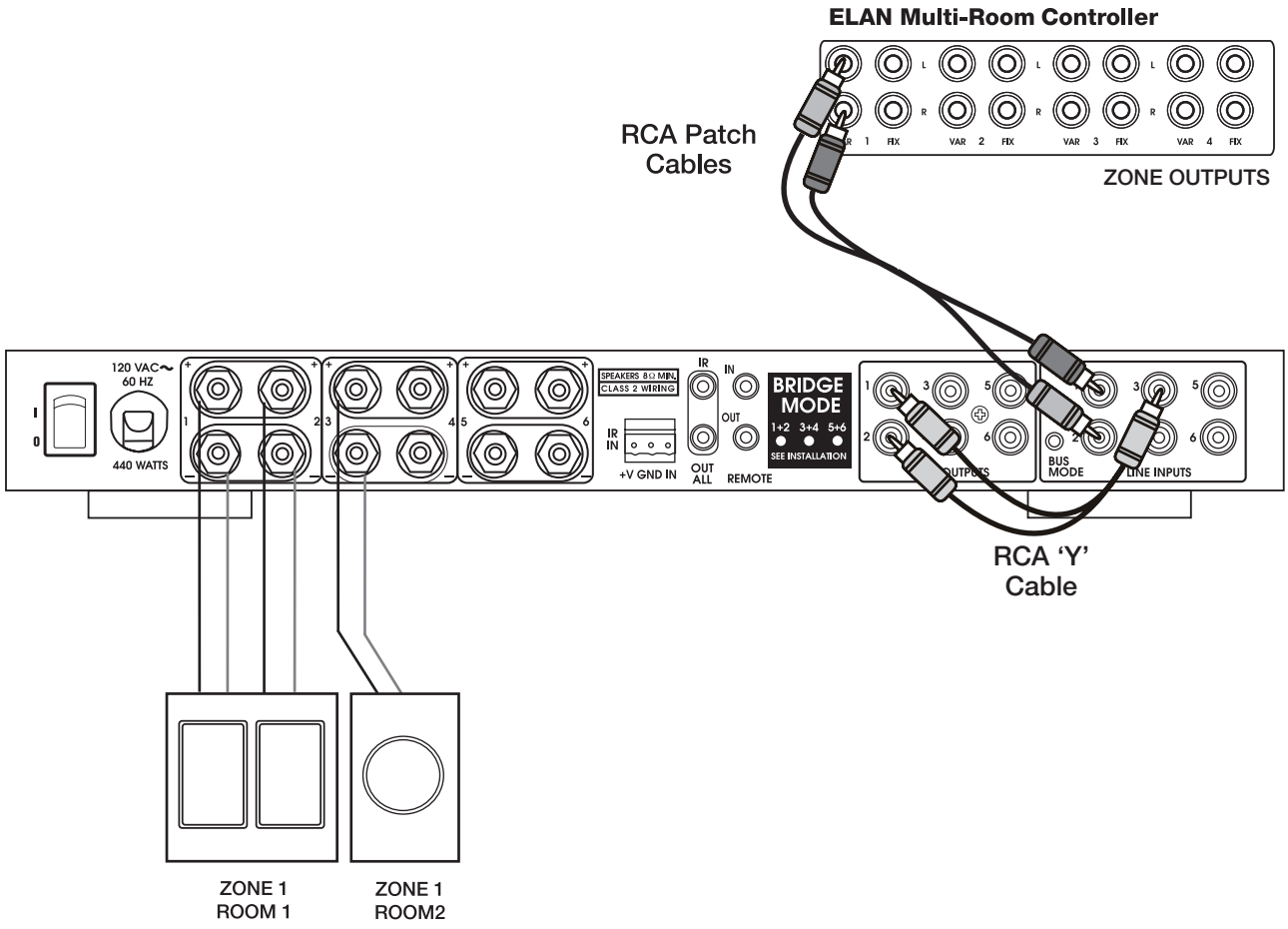


Figure 2-4: Stereo Zone with Mono Sub-Zone

S66A Sub-Zones

ELAN's S66A Integrated Multi-Room Controller has built-in amplification for six stereo zones as well as six sets of preamp outputs for the addition of sub-zones. The A12 is ideally suited to amplify these subzones using rotary or electronic volume controls if separate volume up/down functionality is desired in the sub-zones.

S66A Sub-Zones

- Preamp Output 1 & 2 to Line Inputs 1 & 2
- Preamp Output 3 & 4 to Line Inputs 3 & 4
- Preamp Output 5 & 6 to Line Inputs 5 & 6
- Volume Controls on Each Speaker Output
- Bus Mode DIP Switches in Default DIRECT Position

Each Zone and Sub-Zone Has Independent Volume Control

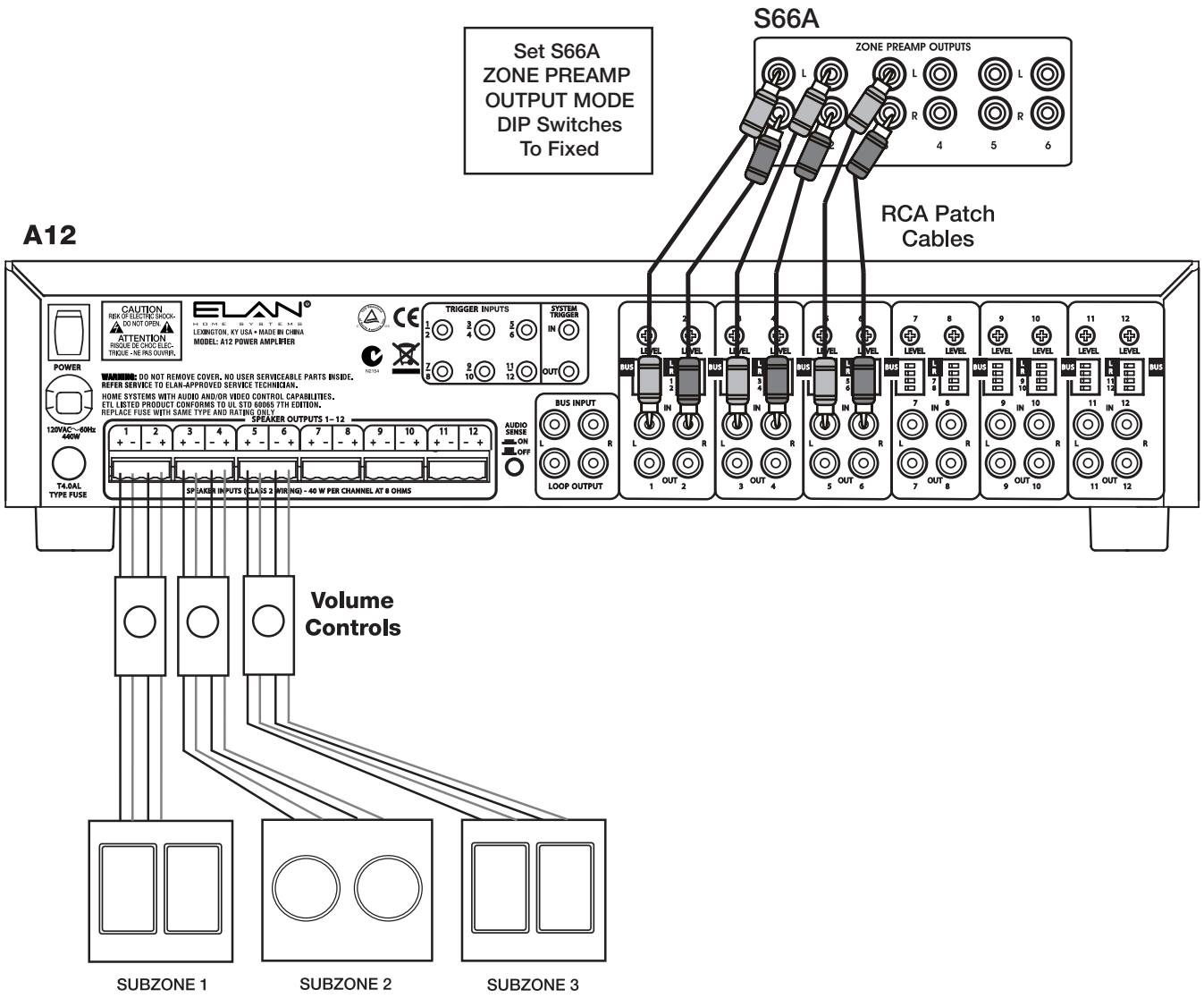


Figure 2-5: S66A Sub-Zones

S86A Sub-Zones

ELAN's S86A Integrated Multi-Room Controller has built-in amplification for six stereo zones as well as six sets of preamp outputs for the addition of sub-zones. The A12 is ideally suited to amplify these subzones using rotary or electronic volume controls if separate volume up/down functionality is desired in the sub-zones.

S86A Sub-Zones

- Preamp Output 1 & 2 to Line Inputs 1 & 2
- Preamp Output 3 & 4 to Line Inputs 3 & 4
- Preamp Output 5 & 6 to Line Inputs 5 & 6
- Volume Controls on Each Speaker Output
- Bus Mode DIP Switches in Default DIRECT Position

Each Zone and Sub-Zone Has Independent Volume Control

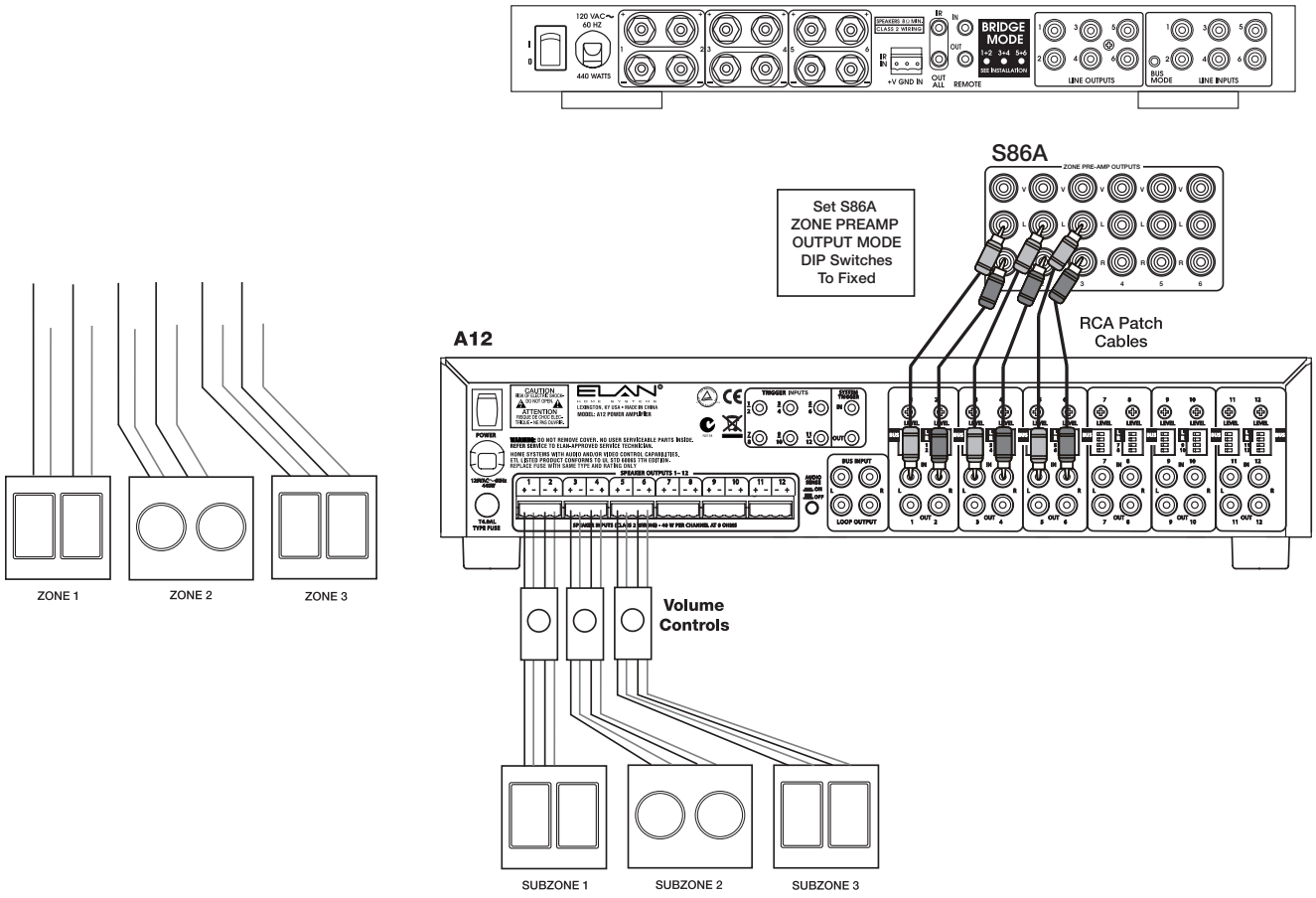


Figure 2-6: S86A Sub-Zones

S128P Sub-Zones

ELAN's S128P Integrated Multi-Room Controller has variable preamp outputs for eight stereo zones as well as eight sets of fixed preamp outputs for the addition of sub-zones. The A12 is ideally suited to amplify these subzones using rotary or electronic volume controls if separate volume up/down functionality is desired in the sub-zones.

S128P Sub-Zones

- Fixed Preamp Output 1 & 2 to Line Inputs 1 & 2
- Fixed Preamp Output 3 & 4 to Line Inputs 3 & 4
- Fixed Preamp Output 5 & 6 to Line Inputs 5 & 6
- Volume Controls on Each Speaker Output
- Bus Mode DIP Switches in Default DIRECT Position

Each Zone and Sub-Zone Has Independent Volume Control

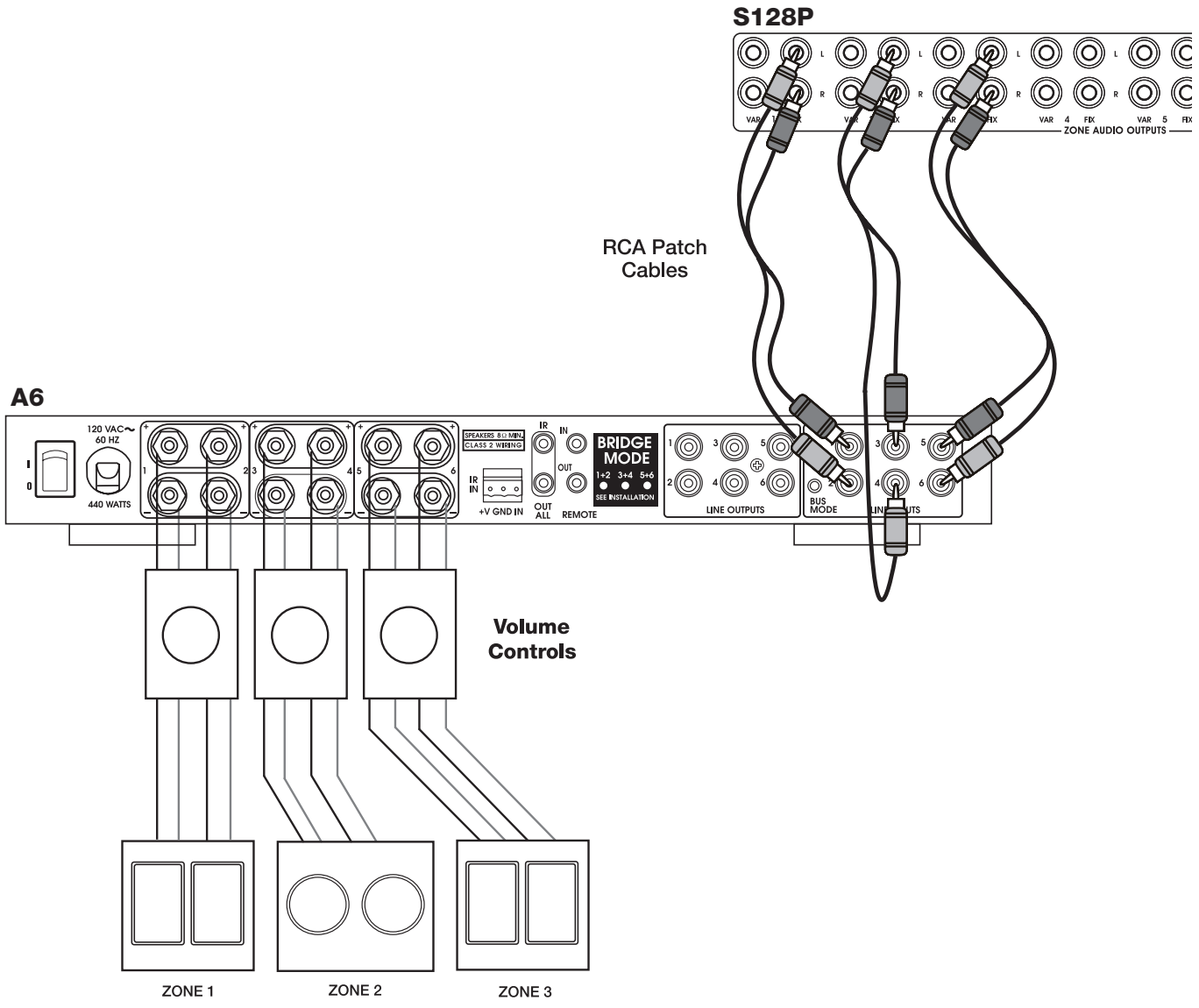


Figure 2-7: S128P Sub-Zones

Chapter 3: Connections

Bussing

The term BUS is defined as the ability to route a signal from one place to another. Traditional busing is done using audio patch cables to route these signals. The use of Bus Switches, such as the ones on the A12, eliminates the need for additional patch cables and adds to the flexibility of signal routing.

Bus Input & Bus Loop Ouput

A stereo or monaural audio signal connected to the A12's main BUS INPUT can be routed to any of the A12's twelve channels. This feature is excellent for standalone distributed audio systems where one source (i.e. an A/V Receiver) is providing audio to the entire home, and also for ELAN multi-room applications where a zone's audio signal needs to be routed to multiple amplifier channels. Examples of both these applications are shown on the following pages.

The BUS LOOP OUTPUT is an easy way to add on additional rooms of music by connecting them to a second (or 3rd, or 4th) A12.

Bus DIP Switch Settings

There are independent BUS DIP switches for each channel on the A12. The DIP switches labeled BUS L (Left) and BUS R (Right) determine whether the signal connected to the Left and Right channels of the BUS INPUT will be routed to that channel. Any channel that has its BUS switches in the ON (DIP switch set to the left) position will receive the audio signal from the BUS INPUT.

Factory Default DIP Switch Settings

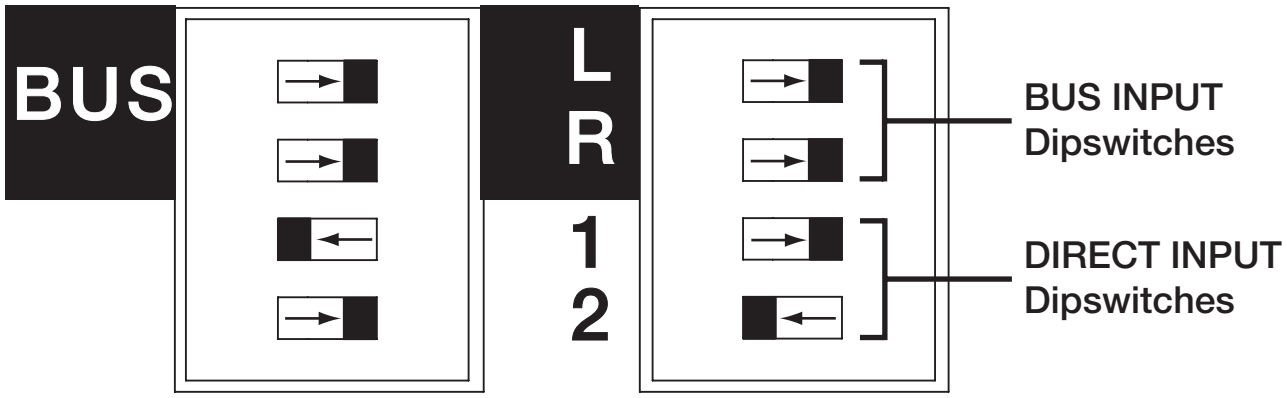


Figure 3-1: A12 Bus DIP Switches

Stand-Alone System Examples

Stereo Bussing

The example below shows the preamp output of an A/V Receiver being distributed throughout the home in stereo using the BUS INPUT of the A12. A second A12 can be added for six additional pairs of speakers via the Bus Loop Outputs. Up to four A12s can be linked via LOOP OUTPUTs.

Stand-Alone System w/ A/V Receiver

- Bussed to Six Stereo Rooms
- Optional Second A12 Shown
- A/V receiver to BUS INPUTS of A12 #1
- LOOP OUTPUTS of A12 #1 to BUS INPUTS of A12 #2

All Speakers Volume Ramps Up & Down Together

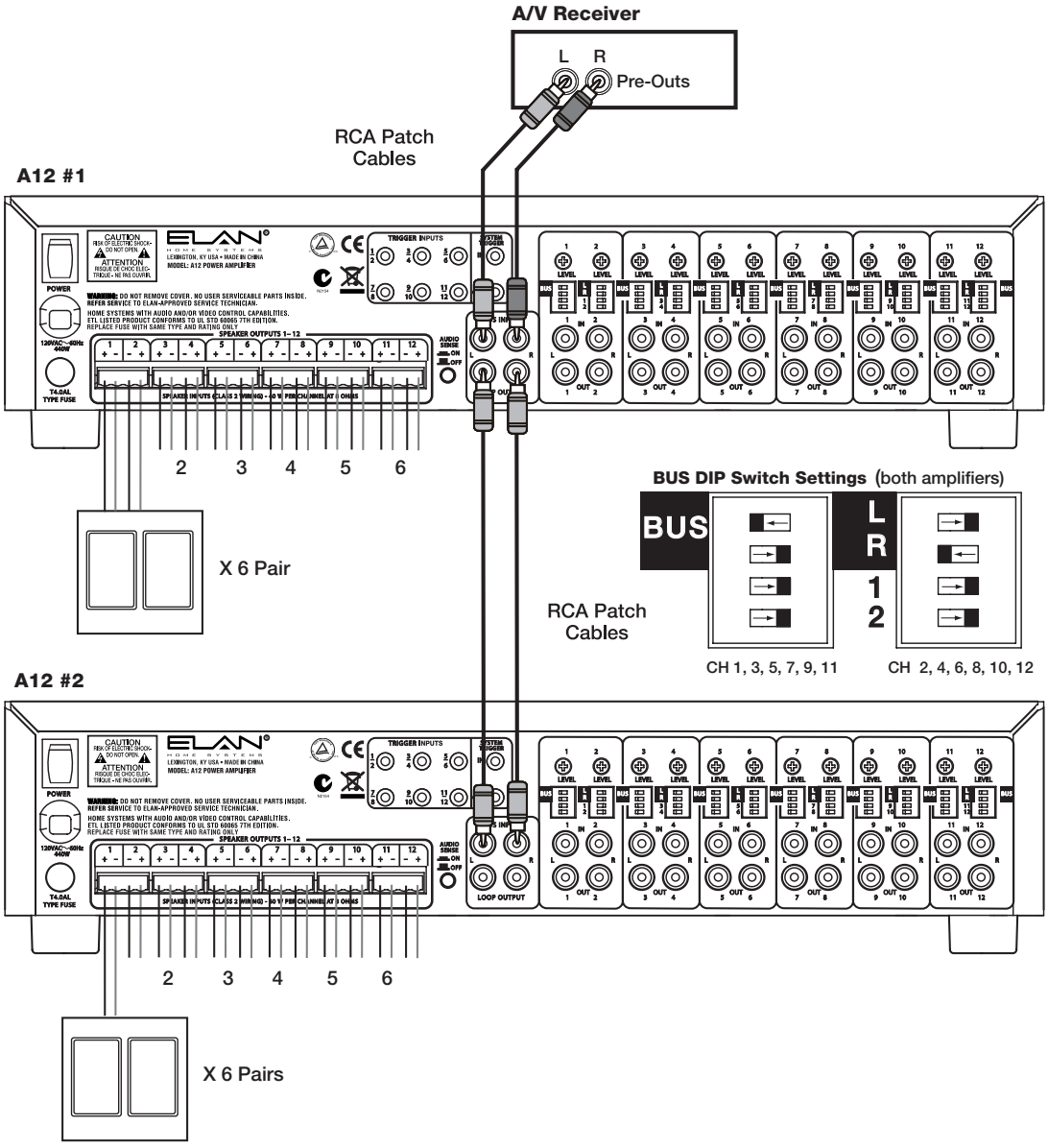


Figure 3-2: Stand-Alone System with A/V Receiver

Mono Bussing

This example is a variation of the previous one. The first A12's Bus Loop Outputs are 'Y'd' to create a summed L/R signal, allowing the addition of twelve monaurally-wired speakers.

Stand-Alone System w/ A/V Receiver (Mono)

- A12 #1 Bussed Stereo
- A12 #2 Bussed Mono
- A/V receiver to BUS INPUTS of A12 #1
- LOOP OUTPUTS of A12 #1to BUS INPUT R of A12 #2 using RCA 'Y' Cable

All Speakers Volume Ramps Up & Down Together

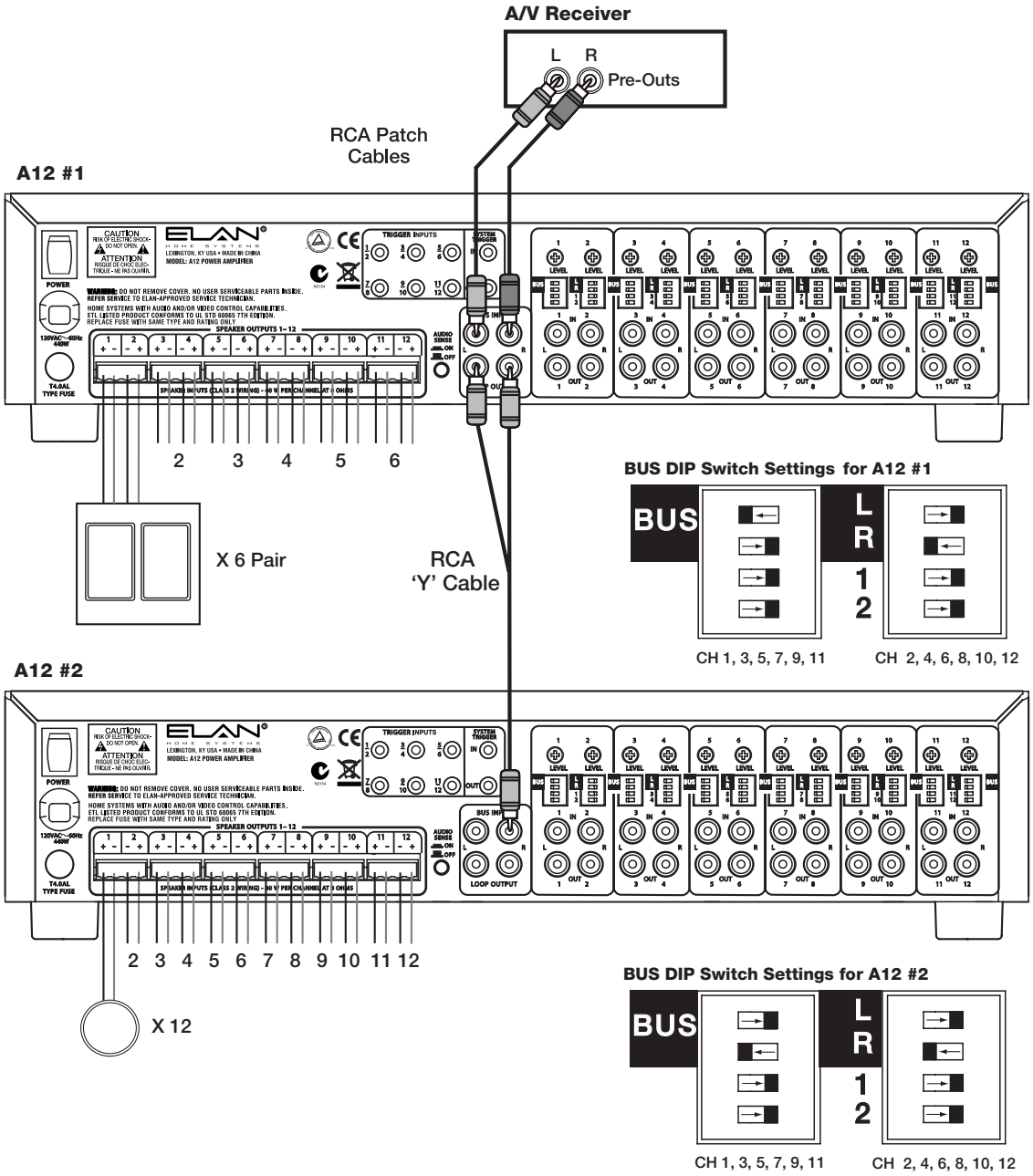


Figure 3-3: Mono Bussing

ELAN Multi-Room System Examples

'Bussing' the audio from a Zone Output of an ELAN multi-room controller is an easy way to create a large 'wide coverage zone' without using any additional patch cables. The following diagrams show examples of how both stereo and mono 'wide coverage zones' may be configured.

ELAN Multi-Room System w/ Bussed Stereo Wide Coverage Zone

- ELAN Multi-Room Controller Zone Outputs 1-3 to A12 Inputs 1-6
- ELAN Multi-Room Controller Zone Output 4 to A12 BUS INPUTs

Each Zone's Speakers Have Independent Volume Wide Coverage Zone's Speakers Volume Ramps Up & Down Together

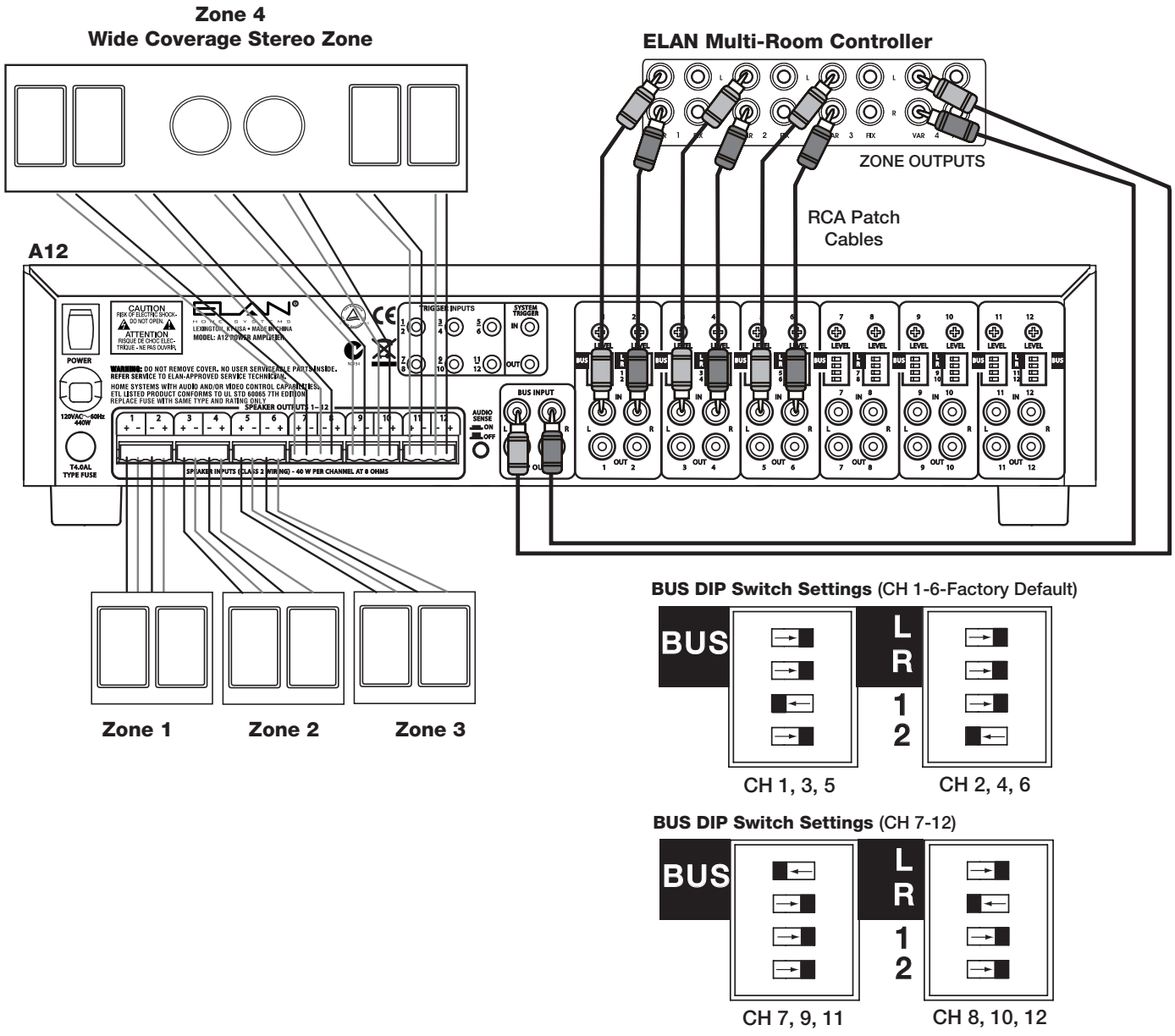


Figure 3-4: ELAN Multi-Room System with Stereo Wide Coverage Zone

ELAN Multi-Room System w/ Bussed Mono Wide Coverage Zone

- ELAN Multi-Room Controller Zone Outputs 1-3 to A12 Inputs 1-6
- ELAN Multi-Room Controller Zone Output 4 to A12 BUS INPUT R Using RCA 'Y' Cable

Each Zone's Speakers Have Independent Volume Wide Coverage Zone's Speakers Volume Ramps Up & Down Together

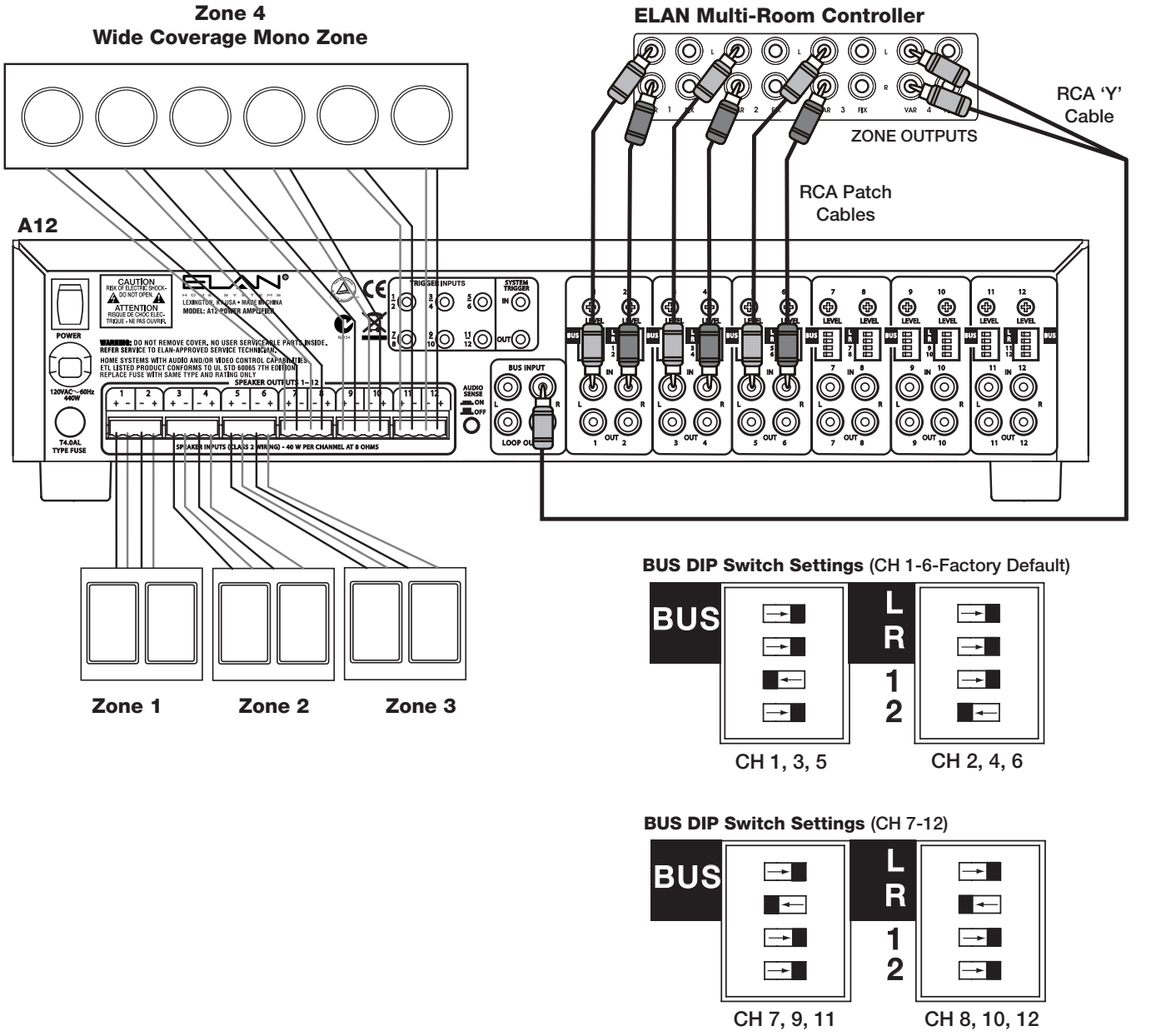


Figure 3-5: ELAN Multi-Room System with Mono Wide Coverage Zone

Direct Input Bussing

There are independent Direct Input Bus DIP switches for each channel on the A12. These DIP switches are located directly below the BUS L/R DIP switches and are labeled 1-12. Their purpose is to allow the creation of summed mono signals without having to use additional patch cables. For example, if A12 Input #1 is being fed a monaural signal, and Input #2 needs to receive that same signal, slide the DIP switch labeled "1" to the left, (ON) position for both channels 1 and 2. Direct Input Bussing is for channel pairs only (1/2, 3/4, 5/6, 7/8, 9/10, 11/12). In other words, Channel 3 can only be sent to Channel 4, and Channel 4 can only be sent to Channel 3.

ELAN Multi-Room System w/ Direct Input Bussed Zones

The example below shows the use of the Left (odd numbered) inputs. The Right (even-numbered) inputs can also be used. Make sure to set the DIP switches correctly, as shown below, depending on whether Right or Left inputs are being utilized.

ELAN Multi-Room System w/ Direct Input Bussed Mono Zones

• ELAN Multi-Room Controller Zone Outputs 1-3 to A12 Inputs 1, 3, & 5 OR Inputs 2, 4, & 6 Using RCA 'Y' Cables

Each Zone's Speakers Have Independent Volume

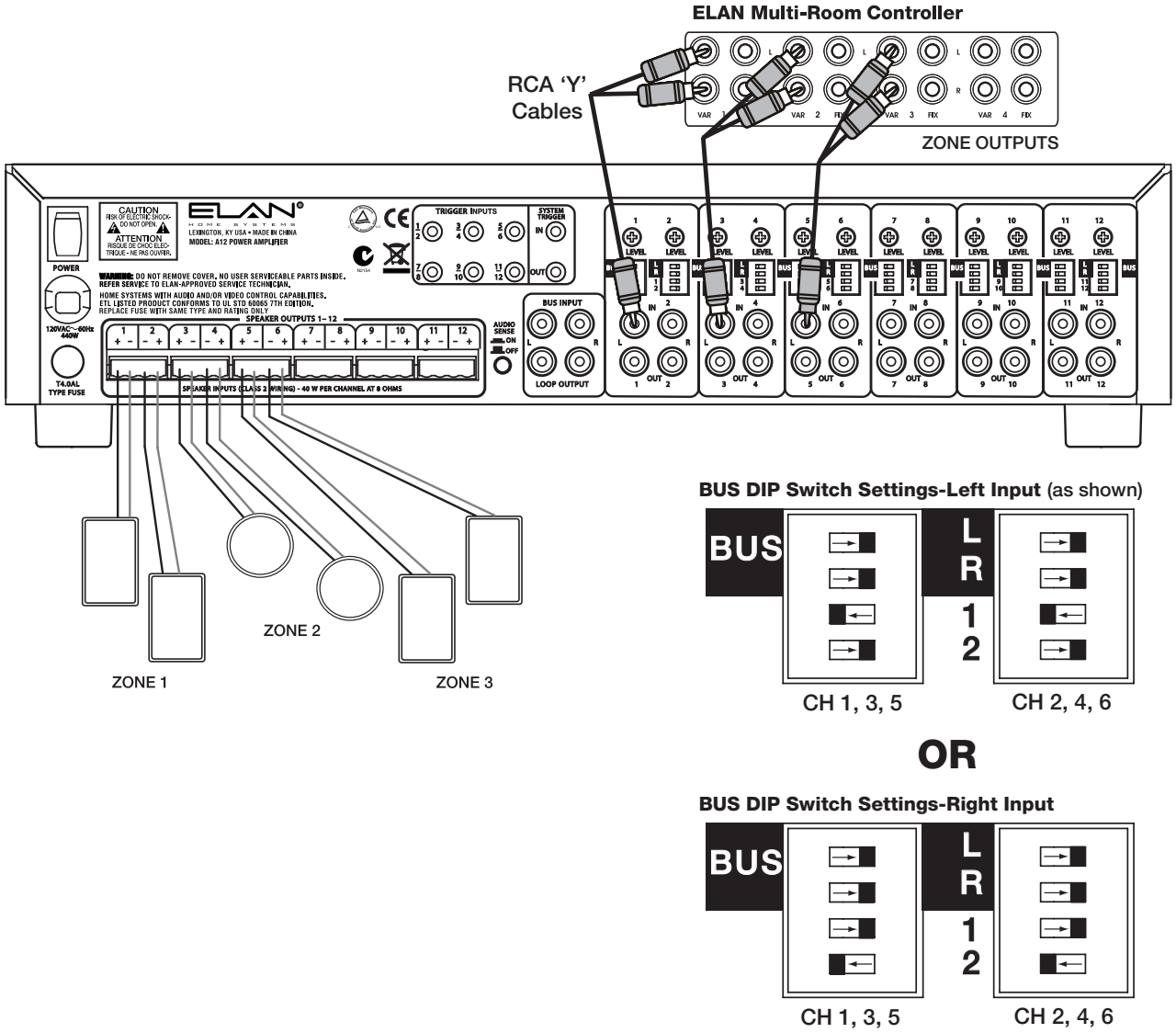
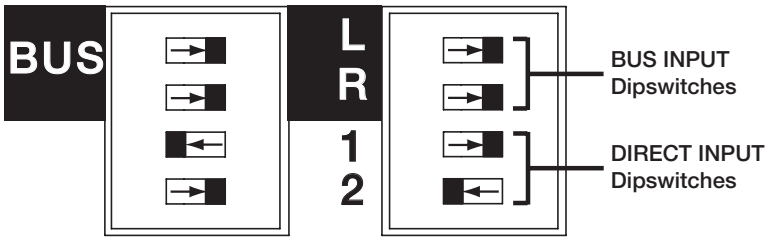


Figure 3-6: Direct Input Bussing

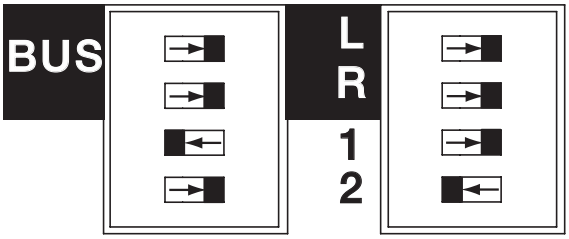
DIP Switch Settings

The four DIP switches correspond (from top to bottom) to Bus Left, Bus Right, Direct Input Left, and Direct Input Right. Flip the switch to the left to enable the setting, to the right to disable it. Only one setting should be enabled (set to the left position) at a time. Carefully review the diagrams below before setting DIP switches.

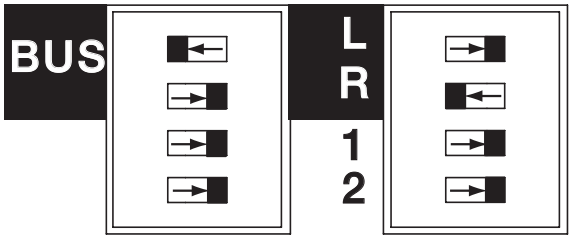
Factory Default DIP Switch Settings



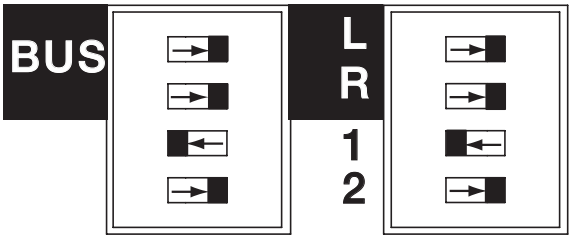
Direct Input-Stereo (Factory Default)



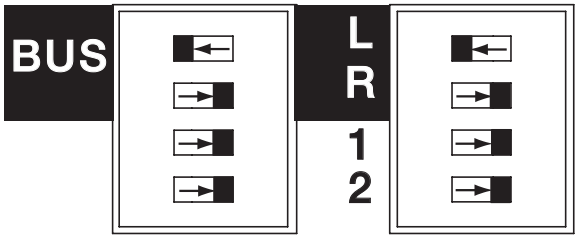
Bus Mode-Stereo



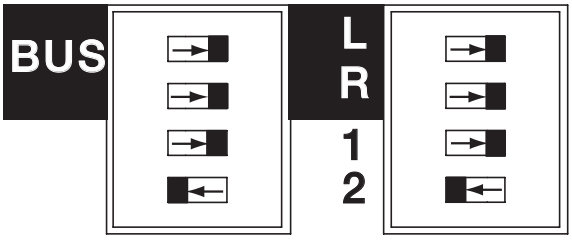
Direct Input-Mono
(Sending CH. 1, 3, 5, 7, 9, or 11 to CH. 2, 4, 6, 8, 10, or 12)



Bus Mode-Mono
(Sending Left Bus Input to Left & Right Channels)



Direct Input-Mono
(Sending CH. 2, 4, 6, 8, 10, or 12 to CH. 1, 3, 5, 7, 9, or 11)



Bus Mode-Mono
(Sending Right Bus Input to Left & Right Channels)

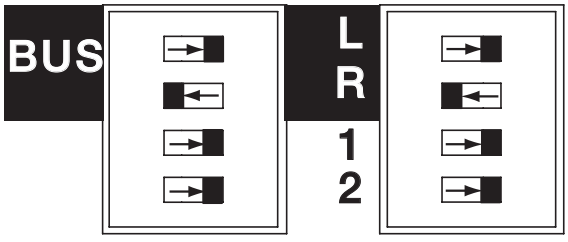


Figure 3-7: DIP Switch Settings

Triggers

Each channel pair of the A12 has its own Remote Turn On/Muting circuit (TRIGGER INPUTS 1/2-11/12). Individual channel pairs can be muted or un-muted independently of any others. A SYSTEM TRIGGER IN port allows all channels to turn on or mute simultaneously. All TRIGGER INPUTS can receive 5-24 Volts AC or DC. The 12 Volt DC SYSTEM TRIGGER OUT can be used to turn on other equipment, additional A12s or other amplifiers, or to perform automated functions desired by the user. Use 3.5mm mono interconnect cables to make Trigger connections.

TRIGGER INPUTS 1/2-11/12

To Mute/Un-Mute specific pairs of channels, a zone-specific triggering source must be used. Any 5-24 Volt DC source may be used to trigger these specific inputs. This application gives additional control in advanced systems. Examples include: ZONE TRIGGER OUTPUTs from an ELAN Multi-Room Controller, multiple A/V receivers triggering separate A12 inputs, or outboard sensors located in certain areas to trigger specific inputs of the A12.

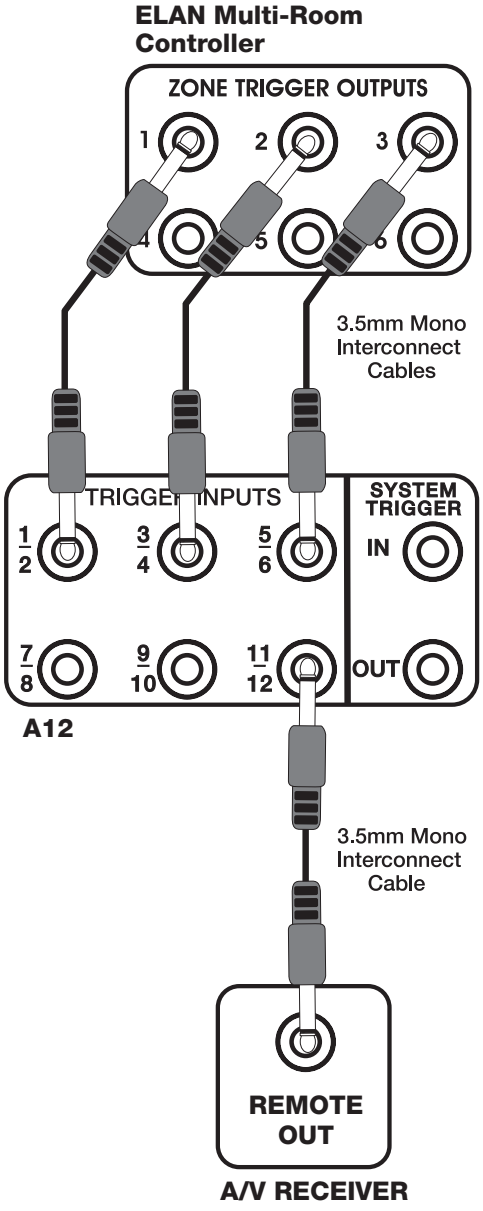


Figure 3-8: Trigger Inputs

SYSTEM TRIGGER IN

To mute/un-mute all channels simultaneously, connect a system-wide 5-24 Volt DC triggering source to the SYSTEM TRIGGER IN port using a 3.5mm mono interconnect cable. Examples of triggering sources include an ELAN Multi-Zone Controller's SYSTEM TRIGGER OUT or REMOTE OUT, an A/V receiver's switched outlet connected to a power supply, or a +12VDC TRIGGER OUT from another ELAN amplifier.

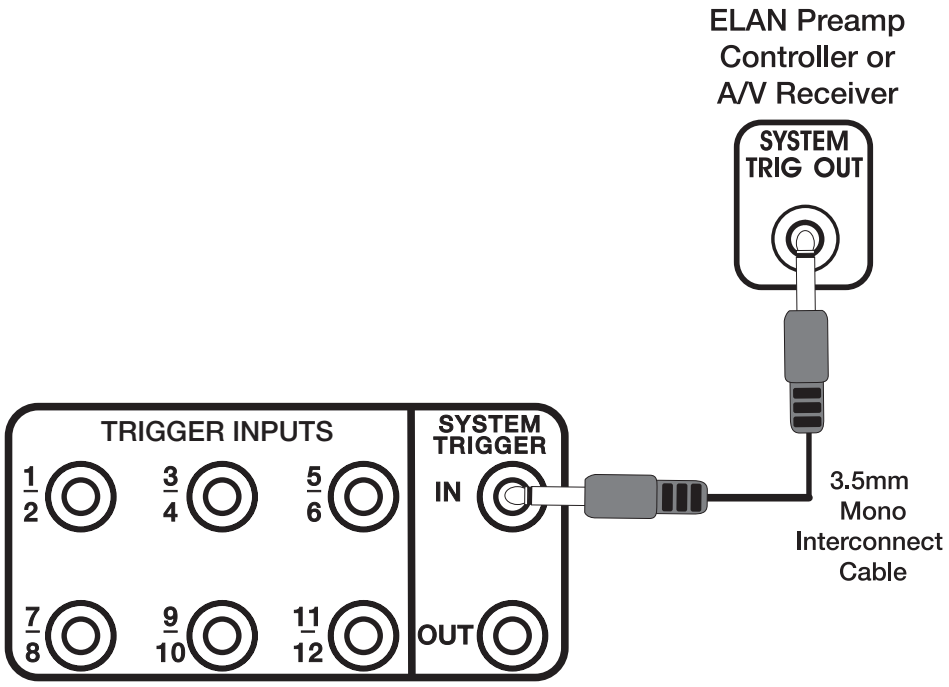


Figure 3-9: System Trigger In

SYSTEM TRIGGER OUT

Whenever the A12 is powered On an any channel is On, the SYSTEM TRIGGER OUT becomes active. This output sends a +12VDC 100mA signal to other devices with a Trigger Input. Examples of proper usage of the SYSTEM TRIGGER OUT include muting/un-muting other amplifiers, triggering the switched outlets of a Z•Power Controller, or triggering automated events using ELAN®Sense Sensors and VIA! SR-1 or VIA!2-SS1 devices.

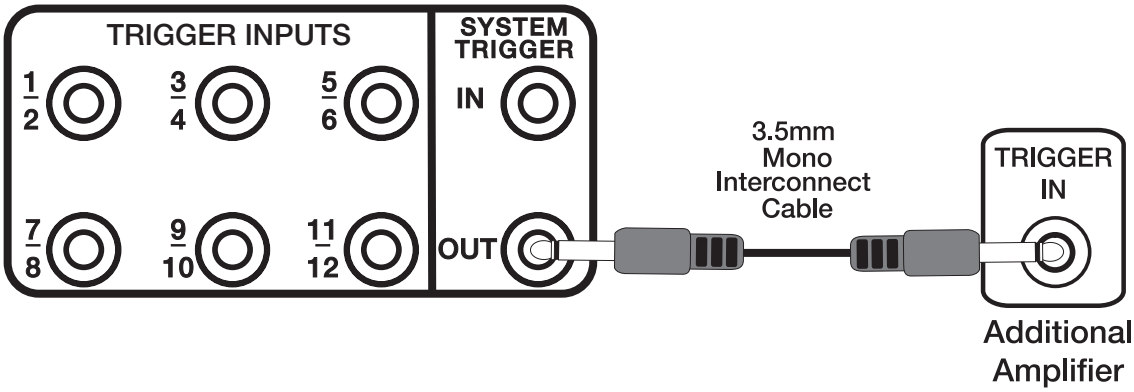


Figure 3-10: System Trigger Out

TRIGGER INPUTS
ACCEPT
5-24 VOLTS DC

Speaker Connections

Six removable flip-lock connectors allow for easy speaker wire terminations for up to twelve speakers. Use 28-16 AWG stranded copper speaker wire to connect from a zone's speaker location to the output terminal of an A12 amplifier.

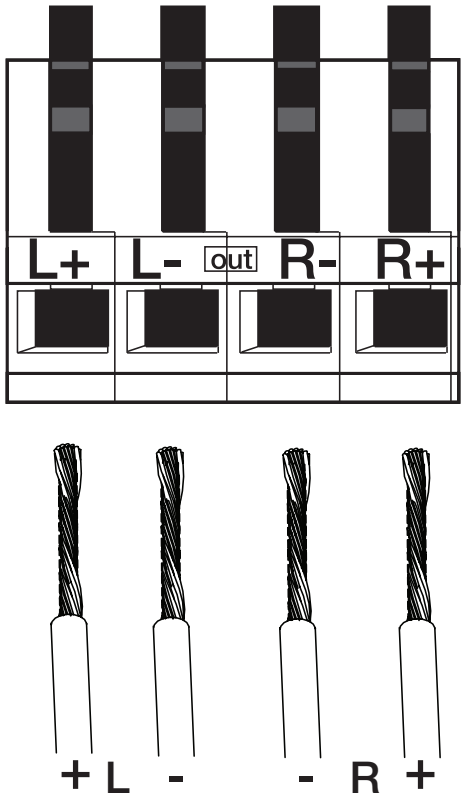


Figure 3-11: Speaker Flip-Lock Terminal Connection

To make connections:

1. Cut the ends of the wire to length, allowing some free play (about 6 inches of slack) to allow for movement when physically connecting the wire.
2. Using wire strippers, remove 1/2 inch of insulation, then twist the wire to ensure that no stray strands are evident.
3. Define positive (+) and negative (-) at the amplifier end and the speaker end of the wire run and use the same conductor on each end.
4. Lift up each flip-lock connector until it is locked in the up position. Place the bare lead from each speaker wire into the holes of the flip-lock terminal of the A12, maintaining the polarity of each lead (+ to +, - to -).

Important Notes:

- **Use 28-16 AWG Stranded Copper Speaker Wire**
- **Amplifier is Rated at 8 Ohms. Do Not Configure Impedance Below 8 Ohms.**
- **The amplifier is NOT bridgeable. Do NOT attempt to bridge or combine channels.**

Chapter 4: Operations & Settings

Setting Channel Levels

The A12 features independent Level Adjustment Pots for each of its twelve channels. Use a small Phillips screwdriver to independently adjust each channel of the amplifier for the specific speakers and environmental conditions of the area it is powering. Turning the pot clockwise increases the level, while turning it counter-clockwise decreases the level. Factory default is 50%.

Set the levels by first lowering them all the way down, then raise the volume of any keypads or volume controls to maximum. Slowly increase the level of the channel being adjusted by turning the potentiometer clockwise until the channel begins to distort, then reduce the level slightly (turn counter-clockwise) until distortion is no longer present. Follow this procedure for each channel.

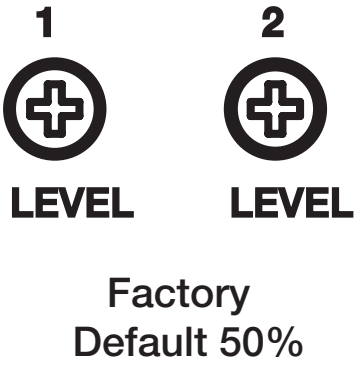


Figure 4-1: Level Adjustment Potentiometers

Audio Sense

When Audio Sense is enabled (AUDIO SENSE button depressed), the presence of audio on a particular line-level audio input will automatically un-mute the corresponding speaker-level audio output. Once the audio output is active, the SYSTEM TRIGGER OUT will also become active. If Audio Sense is enabled, it will mute a channel once an audio signal is absent for a period of two minutes.

Figure 4-2: Audio Sense Button

Turn-On Modes

Use any of the following methods to mute/un-mute the A12:

Default Mode

- No TRIGGER INPUTS are connected.
- AUDIO SENSE button is Off.
  - All channels are un-muted when power switch is On.

Audio Sense Mode

- AUDIO SENSE button is On.
  - Specific channel is muted if audio is not detected on that channel.
  - Specific channel is un-muted when audio is detected on that channel.
  - Specific channel is muted when audio is not present on that channel for 2 minutes.

System Trigger Input Mode

- 3.5mm mono interconnect cable is connected to SYSTEM TRIGGER IN.
- AUDIO SENSE button is Off.
  - All channels are muted if no voltage is applied to SYSTEM TRIGGER IN.
  - All channels are un-muted when voltage is applied to SYSTEM TRIGGER IN.

Channel-Specific Trigger Input Mode

- 3.5mm mono interconnect cable is connected to TRIGGER INPUTS 1/2-11/12.
- AUDIO SENSE button is Off.
  - Specific channel pair is muted if no voltage applied to TRIGGER INPUTS 1/2-11/12.
  - Specific channel pair is un-muted when voltage is applied to TRIGGER INPUTS 1/2-11/12.
  - Channel pairs with no TRIGGER INPUT connected will be un-muted.

System Trigger AND Audio Sense Mode

- 3.5mm mono interconnect cable is connected to SYSTEM TRIGGER IN.
- AUDIO SENSE button is On.
  - All channels are muted if audio is not detected AND no voltage is applied to SYSTEM TRIGGER IN.
  - Specific channel pair is un-muted if audio is detected AND voltage is applied to SYSTEM TRIGGER IN.

Channel-Specific Trigger AND Audio Sense Mode

- 3.5mm mono interconnect cable is connected to TRIGGER INPUTS 1/2-11/12.
- AUDIO SENSE button is On.
  - Specific channel pair is muted if audio is not detected AND no voltage is applied to TRIGGER INPUTS 1/2-11/12.
  - Specific channel pair is un-muted if audio is detected AND voltage is applied to TRIGGER INPUTS 1/2-11/12.

Chapter 5: Troubleshooting

Symptom	Possible Cause	Solution
No Audio From One or More Channels	1. Loose/bad speaker cable connection	1. Check cable ends at binding posts and speaker terminals.
	2. Break/short in speaker cable	2. Check continuity of each speaker cable using multimeter. If short or open is indicated, check wiring for proper connections.
	3. Speaker is defective	3. Swap with known good speaker.
	4. RCA patch cable defective	4. Swap with known good patch cable.
	5. Source not sending audio	5. Verify source is powered up and playing. Check any tape monitor settings on A/V Receiver.
	6. DIP switches set incorrectly. Verify BUS DIP switch settings	6. Verify/correct dip switch settings.
No Audio From One Channel	Amplifier is overheating due to inadequate ventalation or prolonged operation at clipping levels.	1. (a) Turn the amplifier off and allow the internal circuits to cool. (b) Ensure that the amplifier has proper ventilation. Add cooling fan if necessary. (c) Lower the gain level controls for that channel pair.
No Audio From One Channel	Unit may require service.	Contact ELAN Technical Support.
Very Low or No Sound on Some or All Channels	Audio input cable is bad.	Check source equipment cables for damage and faulty connections and correct.
Audio “Hum”	1. Ground potential difference between source components (ground loop)	1. (a) Test AC outlet using ground tester. (b) Reverse the AC plug of components with non-polarized ends plugged into the same outlet strip as amp.
	2. Faulty/damaged cables	2. Check source equipment cables for damage and faulty connections.
	3. Faulty wiring	3. (a) Make sure volume controls are not hooked up backwards. (b) Check for shorts in wiring (see item 2 in “No audio…”).

Symptom	Possible Cause	Solution
Distorted Audio at Normal Volume Levels	1. Input gain set too high	1. Reduce gain to the channel in question.
	2. Defective/incompatible speaker	2. (a) Check for physical damage to speaker. (b) Ensure speakers have appropriate power rating for amplifier. (c) Ensure speakers are rated @ 8 Ohm impedance. This amp is compatible with speakers with 8 Ohm impedance or greater.
	3. Volume control wired incorrectly	3. Check for proper input/output connections at volume control. Input comes from amplifier, output goes to speakers.
	4. Volume control Impedance Match settings incorrect	4. Verify/correct Impedance Match settings.
Audio is Unclear, Bass Response Low	Speakers out of phase	Verify that + of amplifier goes to +of speaker and - of amplifier goes to - of speaker on ALL speaker leads.
Incorrect Source Playing on Speakers	1. Source connected to wrong input of amplifier	1. Verify/correct input connections.
	2. Speakers connected to incorrect speaker outputs	2. Verify/correct speaker connections.
	3. DIP switches set incorrectly	3. Verify/correct DIP switch settings.
Amplifier Will Not Power Up	1. Power switch is Off	1. Turn switch On. Switch is located on the back of unit.
	2. Circuit breaker tripped	2. Reset circuit breaker. Ensure that combined current draw of all devices on circuit does not exceed the circuit's capacity.

Technical Support

If, after carefully following the steps in the **Troubleshooting** section, you are unable to resolve issues with the installation or operation of the A12, please call ELAN Technical Support at 1-800-622-ELAN (3526).

Appendix A: Specifications

Audio Section	
Power Rating - Output Power	12 x 40W RMS @ 8 Ohms
Frequency Response	20Hz to 20kHz, +/-1dB into 8 Ohms
Full Power Bandwidth	5Hz to 55kHz, -3dB into 8 ohms
Signal-To-Noise	> 95dB (A-weighted)
Channel Separation	>-70dB (Channel to Channel @1kHz)
Total Harmonic Distortion	< .01% @ 1kHz < 0.06% @ 10kHz
Intermodulation Distortion	< 0.1%
Voltage Gain (AV)	Continuously Variable from 0 - 20
Slew Rate	> 9 V/microsecond
Input Impedance	47k Ohms
Input Sensitivity	0.707 mV RMS
Connectors	
Input/Loop Outputs	Gold RCA Phono
Speaker Outputs	Removable Locking Terminals
Power	
AC Power Requirements	A12-120 VAC, 440 Watts A12240-240 VAC, 440 Watts
Power Supply	Ultra-High Efficiency Toroidal Transformer
Triggers	
Remote Trigger Inputs	5 to 24 VDC
Remote Trigger Outputs	+12 VDC @0.1A
Dimensions/Weight	
Dimensions w/ Feet (2U w/o Feet)	17 W x 4 1/8 H x 14 D (in) 432 W x 105 H x 356 D (mm)
Weight	20 lbs/9.07 kg

Appendix B: Rack Mounting

RMK3 Rack-Mount Kit

When mounting the A12 amplifier in an equipment rack, use ELAN's RMK3 Rack Mount Kit for secure mounting and proper ventilation. The RMK3 requires three rack spaces. To install the RMK3 into a standard 19" equipment rack:

1. Slide the rack mount kit onto the A12 chassis from the front as shown in ***Figure B-1***.

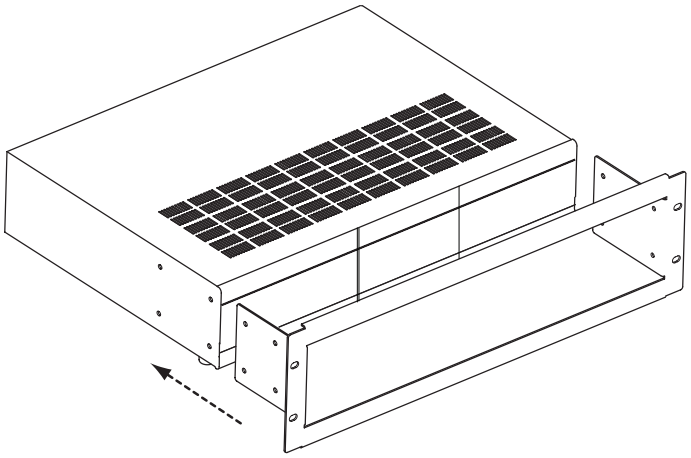


Figure B-1

2. Ensure that the unit is flush with the front of the mounting kit. Install each of the eight screws (included) through the side mounting flanges into the holes in the sides of the unit as shown in ***Figure B-2***. Hand tighten screws! Over-tightening could cause damage to the A12 Amplifier.

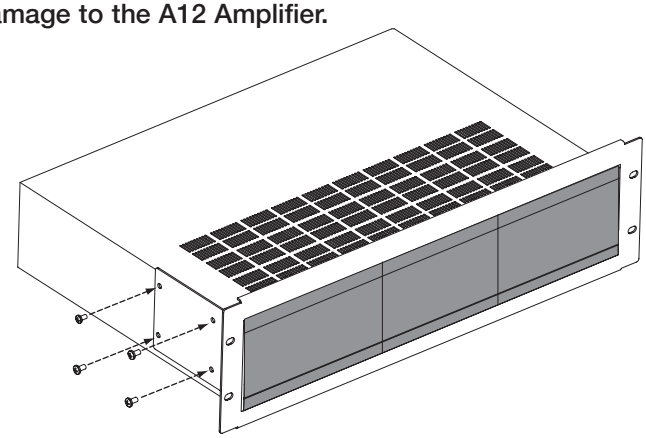


Figure B-2

3. Once the unit is securely mounted into the RMK3, install the entire assembly into a standard 19" equipment rack from the front using four rack screws (not included) as shown in ***Figure B-3***.

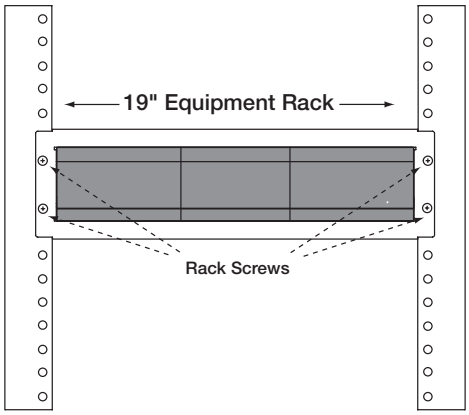


Figure B-3

Limited Warranty

ELAN HOME SYSTEMS L.L.C. (“ELAN”) warrants the A6 Six Channel Analog Amplifier to be free from defects in materials and workmanship for the period of two years (2 years) from date of purchase. If within the applicable warranty period above purchaser discovers that such item was not as warranted above and promptly notifies ELAN in writing, ELAN shall repair or replace the item at the company’s option. This warranty shall not apply (a) to equipment not manufactured by ELAN, (b) to equipment which shall have been installed by other than an ELAN authorized installer, (c) to installed equipment which is not installed to ELAN’s specifications, (d) to equipment which shall have been repaired or altered by others than ELAN, (e) to equipment which shall have been subjected to negligence, accident, or damage by circumstances beyond ELAN’s control, including, but not limited to, lightning, flood, electrical surge, tornado, earthquake, or other catastrophic events beyond ELAN’s control, or to improper operation, maintenance or storage, or to other than normal use of service. With respect to equipment sold by, but not manufactured by ELAN, the warranty obligations of ELAN shall in all respects conform to the warranty actually extended to ELAN by its supplier. The foregoing warranties do not cover reimbursement for labor, transportation, removal, installation or other expenses which may be incurred in connection with repair or replacement.

Except as may be expressly provided and authorized in writing by ELAN, ELAN shall not be subject to any other obligations or liabilities whatsoever with respect to equipment manufactured by ELAN or services rendered by ELAN.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED AND IMPLIED WARRANTIES EXCEPT WARRANTIES OF TITLE, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

ATTENTION: TO OUR VALUED CONSUMERS

To ensure that consumers obtain quality pre-sale and after-sale support and service, ELAN Home Systems products are sold exclusively through authorized dealers. ELAN products are not sold online. The warranties on ELAN products are NOT VALID if the products have been purchased from an unauthorized dealer or an online E-tailer. To determine if your ELAN reseller is authorized, please contact ELAN Home Systems at (859) 269-7760.
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